Grade 8 AIMS Reference Sheet

Use 3.14 or $\frac{22}{7}$ for π.

Plane Figures: Perimeters and Areas

Name	Notation	Circumference (C) Perimeter (P)	Area (A)
Circle	r = radius d = diameter	$C = \pi d$ or $C = 2\pi r$	$A = \pi r^2$
Parallelogram	a, b = sides h = height	$P = 2(a + b)$	$A = bh$
Rectangle	l = length w = width	$P = 2(l + w)$	$A = lw$
Trapezoid	a, b, c, d = sides b_1 = long base b_2 = short base h = height	$P = a + b + c + d$	$A = \frac{1}{2}h(b_1 + b_2)$
Triangle	a, b, c = sides h = height	$P = a + b + c$	$A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$

Geometric Solids: Volumes and Surface Areas

Name	Notation	Volume (V)	Surface Area (SA)
Rectangular Prism	l = length w = width h = height	$V = lwh$	$SA = 2lw + 2lh + 2wh$
Right Cylinder	r = radius h = height	$V = \pi r^2 h$	$SA = 2\pi r^2 + 2\pi rh$
Right Prism	B = area of the base h = height P = perimeter of the base	$V = Bh$	$SA = 2B + Ph$

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Coordinate Geometry and Linear Equation Forms

Given: Points $S(x_1, y_1)$, $T(x_2, y_2)$

Midpoint between two points: Midpoint $= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Slope of line through two points: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Point–Slope Form: $y - y_1 = m(x - x_1)$

Standard or General Form: $Ax + By = C$

Slope–Intercept Form: $y = mx + b$

Additional Formulas

Distance, Rate, Time Formula: d = distance, r = rate, t = time

$$d = rt$$

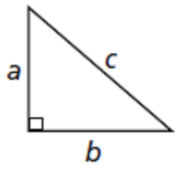
Simple Interest Formulas: I = interest, P = principal,
r = annual interest rate in decimal form, t = time in years, A = total amount after time t

$$I = Prt$$
$$A = P(1 + r)t$$

Density $= \frac{\text{mass}}{\text{volume}}$

Population density $= \frac{\text{number of people}}{\text{unit of area}}$

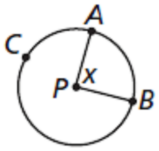
Pythagorean Theorem:



$a^2 + b^2 = c^2$

Angle Formulas

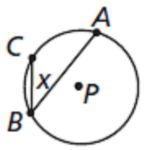
Central Angle Formula:



$m\angle x = m\overset{\frown}{AB}$

where P is the center of the circle.

Inscribed Angle Formula:



$m\angle x = \frac{1}{2}m\overset{\frown}{AC}$

where P is the center of the circle.